

lateral columns. It is not difficult to explain the mental symptoms when cortical degeneration is so intense as may occur in pellagra, and as is seen in the brain I have studied; and the insanity of this disease seems to be of a toxic or infectious character.

The constant involuntary movements of the limbs described by Dr. Anderson, and present also in Dr. Hall's case, are suggestive of the similar movements in strychnine poisoning. In pellagra the degeneration of the cells of the anterior horns probably causing irritation in the muscles innervated by them, the impairment of cerebral inhibition produced by partial degeneration of the pyramidal tracts, and the incoördination produced by the partial degeneration of the posterior columns, the cerebellar tracts, and the cells of Clarke's columns, may all assist in causing involuntary and constant movement. It is sometimes forgotten that holding the hand still and extended is a very perfect form of movement, requiring the degree of tonicity in the flexors and extensors of the limb exactly sufficient to maintain this position.

The spinal pia was considerably thickened in the second case, which was of long duration, but the thickening of the pia was not observed in the first case.

THE INFLUENCE OF THE TRENDLENBURG POSITION ON THE QUANTITY OF URINE EXCRETED DURING ANESTHESIA.

By J. Wesley Bovée, M.D.,

PROFESSOR OF GYNECOLOGY IN THE GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D. C

At the meeting of the American Gynecological Society in 1909, I presented a report of investigations made in my clinic in the Columbia Hospital for Women regarding the influence on renal activity from anesthesia by ether and by chloroform during surgical operations. I had not then thoroughly studied the variation due to the Trendelenburg position, but recorded my having been greatly impressed by it. Eight cases were therein noted as illustrative, and five cases had been especially studied. Having recently studied eight cases of ether anesthesia and eight of chloroform, I present herewith a report on those observations. I believe the results demonstrate that almost no urine is received in the bladder while the Trendelenburg position is being employed.

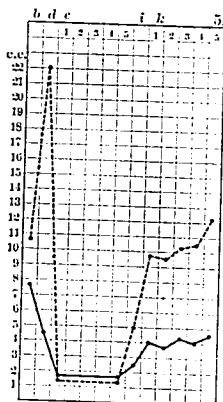
TECHNIQUE. The quantity of urine for a twenty-four-hour period fairly remote from the operation was obtained. Care was used to secure this knowledge without such influences as undue excitement, abnormal intake of fluids, or catharsis. The usual diet was continued until about twelve to fourteen hours before operation.

During this twelve to fourteen hours liquid food in very limited quantities was given. The bowels were moved two or three times, the last by an enema, and nothing but the one anesthetic given. No morphine, atropine, or other drug was used, nor was salt solution in any manner employed. The bladder was emptied by catheter when the administration of the anesthetic was begun; when about to place the patient in the Trendelenburg position, the clamp was removed from the permanent catheter and the bladder emptied. At the end of each fifteen minutes of the time the patient was in this position the bladder was drained. This was facilitated by the fingers pressing, intraperitoneally, upon the bladder. The urine was drawn immediately after the patient was returned to the horizontal position, and at the end of each subsequent fifteen minute period during the administration of the anesthetic, as well as when the anesthetic was stopped. The head nurse of the operating room, Miss Pugh, was very accurate and greatly interested in this feature of the work. During the following two days the urine was carefully measured, usually every fifteen minutes of the first two hours, by means of the permanent catheter.

a	b	c	d	e	f	g	h	i	k				
1	660	35	20	1 2 3 4	35	1	10	4	1	2	3	4	5
2	870	41	2	0 0	64	4	10	4	10	10	8	8	8
3	600	45	16	0 0 0 0	38	12	7	4	4	4	4	4	4
4	630	32	4	0 0 0	38	6	23	1.6	7	2.5	2.5	2.5	2.5
5	...	26	22	0	19	4	15	1	1	1	1	1	4
6	1080	45	2	0	20	0	50	0	1.6	2	2	2	8
7	...	85	24	0 0	40	8	26	0	2	4	4	1	1
8	690	35	12	0	15	1	15	4	2	2	8	8	4
Ave.	7.9	...	4.45		...	1.9	...	2.3	4.0	3.7	4.3	4.0	4.5
1	840	38	44	0	23	8	20	2	40	40	40	40	40
2	1080	35	144	0	17	12	47	8	1.3	1.4	1.4	4	16
3	1110	41	4	0	29	0	24	7	6	6	6	6	5
4	840	35	32	1 0 0	50	0	16	0	0	0	0	0	0
5	480	40	29		10	8	42	12	8	12	20	24	24
6	1230	33	8	0 0	39	6	21	1	16	12	8	2	4
7	870	50	21	0	29	8	7	8	8	7	8	8	8
8	1800	26	168	0 0	31	0	9	0	0	0	0	0	0
Ave.	10.7	...	22.0		...	1.5	...	4.8	9.9	9.8	10.4	10.5	12.1

Explanation of the Table. The first series is ether anesthesia, and the second chloroform. The letter *a* signifies the case number; *b* the cubic centimeters of urine for twenty-four hours; *c* the number of minutes elapsed from the beginning of the administration of the anesthetic to the placing of the patient in the Trendelenburg position. The amount of urine excreted during that period is given in column *d*. The amount excreted during the employment of the Trendelenburg position is represented in fifteen minute periods under *e* 1, 2, 3, and 4; *f* records the exact number of minutes that position was used, while *g* represents the amount of urine drawn from the bladder when the patient's position was changed back to the hori-

zontal. The number of minutes the anesthetic was administered after using the Trendelenburg position is noted in column *h*, while the average amount excreted during each fifteen minutes of that period is found in column *i*; *k* 1, 2, 3, 4, and 5 represent urine quantities for the five periods of fifteen minutes each after the anesthetic was stopped. In every case the amount of urine became normal not later than twenty-four hours after operation.



The figures at the left of the chart indicate the quantity of urine for fifteen-minute periods, and the letters across the top of it refer to the corresponding columns in the table. The broken line represent the chloroform series, and the solid the ether series. It will be noted that in both series (ether 1.9 and chloroform 1.5) the current of urine in the Trendelenburg position suddenly comes down at the beginning to below 2 c.c. per fifteen minutes, and at once raises when the patient is taken out of that position.

In some of the cases in the table it will be noted that following the operation no urine was excreted during the hour and a quarter subsequent to the end of the operation. In each instance, at the end of twenty-four hours the quantity and quality were practically normal. In the chloroform series two patients excreted unusually large quantities during the early part of the anesthetic—one 144 c.c. in thirty-five minutes, and the other 168 c.c. in thirty-six minutes. These two cases extravagantly increase the average amount for fifteen minutes to 22 c.c., which is greatly in excess of the average (8.2) for the other six cases of the series. This gives a striking difference on the chart.

In the paper of 1909 I mentioned the marked lowering of the rate of urinary flow in the Trendelenburg position, estimating it at 32 per cent. In the series now submitted the decrease is for ether 58 per cent. and for chloroform 95 per cent. The decrease in the chloroform series is very much exaggerated, though in the six cases (omitting Cases II and VIII) of the series, in which the flow before using the Trendelenburg position was about normal, the decrease was 82 per cent. It might be said, therefore, that while the patient is in the Trendelenburg position the percentage of decrease in the excretion of urine is 58 per cent. in ether anesthesia and 82 per cent. in anesthesia by chloroform. That this great decrease is not, even in moderate degree, due to urine being retained in the renal pelvis is clear, for the rate of flow subsequent to changing the patient to the horizontal position is not suddenly greatly increased, being but slightly increased in the ether series, a little more in the chloroform series, and not for an hour and a quarter reaching a rate in excess of that of the period preceding the use of the Trendelenburg position. Nor can it be said that the bladder was not satisfactorily drained by the catheter, inasmuch as the fluctuations were always gradual and never sudden, except when changing to or from the Trendelenburg position.

If it can be concluded that the renal function is greatly lessened while the patient is in the Trendelenburg position, then the danger of that position is at once appreciated. In renal inefficiency, and cardiac and arterial lesions, it seems that the use of the Trendelenburg position introduces a special element of danger, and this less markedly when ether is used than when chloroform is employed as the anesthetic.

MULTIPLE ABSCESES OF THE NASAL SUBMUCOSA IN A CASE OF LEUKEMIA.

By JOSEPH P. TUNIS, A.B., M.D.,
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

DURING April and May of 1909 I had the opportunity of examining, in the autopsy room of the Allgemeines Krankenhaus, in Vienna, the nares and accessory sinuses of ten adult heads in the clinical history of which leukemia had played an important part. In only one of these ten cases were multiple abscesses present. They gave the appearance of punctate hemorrhages over the entire nasal mucous membrane, more especially over the turbinate bones. This condition I believe is rarely met with, and therefore warrants detailed description. For permission to report these cases, as well as for the opportunity to study them, I am indebted to the courtesy